

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Docket No.: 16240.M303A
James P. Pfau, et al. Confirmation No. 2477
Serial No.: 10/573,442 Examiner: Nelson, Michael B.
Filed: November 28, 2006 Art Unit: 1794
Title: COMPOSITE DOOR STRUCTURE AND METHOD OF MAKING
SAME, AND COMPOSITE DOOR AND METHOD OF MAKING
SAME

DECLARATION OF JIM PFAU UNDER 37 C.F.R. § 1.132

I, Jim Pfau, do hereby declare and say as follows:

1. I am one of the named inventors of the referenced patent application.
2. I have read and understand the above-captioned patent application, including the specification and the original and amended claims. I also have read and understand the Office Action dated November 6, 2008 and the art applied in the Office Action.
3. I have performed and/or supervised the performance of the experiments described herein.
4. Efforts have been made in the field of door skin manufacturing to replace conventional thermosetting materials with thermoplastic materials in the interest of reducing thermoset waste materials. United States Patent No. 2002/0091218 to Ford (hereinafter "Ford") represents one such effort. However, Ford and others have been unsuccessful in their efforts to effectively reduce a commercially viable thermoplastic door skin to practice for a variety of reasons.

5. Ford discloses a preferred composite molding material containing 66-67 wt% polypropylene, 15 wt% glass fibers, and 15 wt% talc at paragraph 0033. Ford includes glass fiber filler in its thermoplastic door skins to reduce the coefficient of thermal expansion of thermoplastic door skins. Without glass fiber, the door skins will distort when exposed to the severe temperatures in use. However, the glass fibers used by Ford also cause the thermoplastic material to warp during processing, producing a door skin with unacceptable waviness.

6. Paragraph 0035 of Ford discloses adding talc, calcium carbonate, or wood fiber to its door skins. In attempting to reproduce the work of Ford, separate door skins with talc, calcium carbonate, or wood fiber, were prepared per the teachings of Ford at paragraph 0035. It was found that the door skins of Ford consistently exhibited waviness, irrespective of the additive included.

7. Despite the failure of Ford to enable the production of a commercially acceptable door skin product, I and the other inventors persisted in our efforts to develop a commercially viable thermoplastic door skin. One of these efforts involved the addition of mica to the thermoplastic composition. Surprisingly, it was discovered that the combination of glass fibers and mica produced a door skin with lower coefficient of thermal expansion and warp. Consequently, the other inventors and I were able to transform the deficient door skin of Ford into a more viable product.

8. In my opinion a person of ordinary skill in the art would not have selected mica to address the warping problems that plague the Ford door skin. None of Ford's fillers (talc, calcium carbonate, or cellulose) resolved this problem. Given the perceived equivalence of mica to these fillers, the artisan of ordinary skill would have no more

expected mica to resolve the warping problems that talc, calcium carbonate and cellulose failed to correct.

9. Comparative experimental testing was conducted between an inventive thermoplastic formulation containing mica and the Ford formulation. Among these tests, an inventive formulation containing polypropylene, 10 wt% glass and 20 wt% mica was prepared and compared to the above-described preferred formulation of Ford containing polypropylene, 15 wt% glass and 15 wt% talc. Testing showed that the inventive formulation showed an improved coefficient of thermal expansion of $38 \times 10^{-6} / ^\circ\text{C}$ compared to $90 \times 10^{-6} / ^\circ\text{C}$ of Ford. The inventive formulation also showed less than half the warp, i.e., 0.5 inch warp for the inventive formulation compared to a 1.1 inch warp for Ford's formulation.

10. I hereby declare that all statements made herein of my knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-captioned patent application or any patent issued thereon.

Signed this 23rd day of January 2009



Jim Pfaau